

FISH SURVEYS  
OF THE  
CARIBOU NATIONAL FOREST

By

Paul K Cowley  
Forest Fish Biologist  
Uinta and Wasatch-Cache National Forest

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### iii INTRODUCTION

In a joint effort between the Caribou, Bridger-Teton, Uinta & Wasatch-Cache National Forests, Region 4 of the Forest Service, the states of Wyoming, Idaho and Utah and the Bureau of Land Management, surveys were conducted throughout many of the tributaries of the Bear River Drainage. The Montpelier District of the Caribou National Forest was historically part of the Cache National Forest and is currently being administered by the Caribou National Forest. Throughout this report it will be referred to as the Caribou National Forest. The main purpose for conducting these surveys was to identify the location of existing populations of cutthroat trout. A secondary purpose was to collect tissue samples to determine genetic purity of the cutthroat trout. Other information which was hoped could be acquired was a population estimate for fish within the stream and age class distribution of the population.

The streams, sampled (Table 1) on the Caribou National Forest, were selected by the Montpelier Ranger District staff and forwarded to me. Working with a Forest Service seasonal crew, Idaho Department of Fish and Game and

staff of the Montpelier Ranger District, the streams were sampled to determine species composition, fin clips were taken and where possible a population estimate was made.

Table 1. Streams surveyed for fish on the Caribou National Forest in 1994 and township (T), range (R) and section (Sec) where the stream leaves National Forest Lands.

Stream	Tributary of	Location where stream leaves the Forest
Beaver Creek	Logan River	T15N, R 4E, Sec19
Sugar Creek	Cub River	T15S, R41E, Sec29
Worm Creek (West)	Cub River	T15S, R41E, Sec 6
Birch Creek	Mink Creek	T14S, R41E, Sec 9
Bailey Creek	Bear River	T10S, R42E, Sec 7
Georgetown Creek	Bear River	T11S, R44E, Sec 3
Montpelier Creek	Bear River	T12S, R45E, Sec31
Little Beaver Creek	Montpelier Creek	T11S, R45E, Sec28
North Creek	Ovid Creek	T12S, R42E, Sec12
Liberty Creek	Mill Creek	T13S, R42E, Sec 1
Mill Creek	Ovid Creek	T13S, R42E, Sec 1
Worm Creek (East)	Bear River	T15S, R43E, Sec 5
Fish Haven	Bear River	T16S, R43E, Sec16

## METHODS

Crews were instructed to sample two locations on each stream surveyed. Crews consisted of two to three people. One person ran the electrofishing equipment and, depending on the individual, may also have assist in netting fish. The second person would be a netter and a third person would be a netter and also carry a bucket to hold captured fish. A string line or a tape measure would be used to determine the ending point of the 100 M section sampled. One sampling location was located near the stream's mouth if on forest or at the forest boundaries if the stream's mouth was off forest. Some of the samples collected by Idaho Fish and Game personnel were collected off forest to aid in better describing the stream. The second sampling location was located near the headwaters. All possible attempts were made to locate sampling sections where a crew, in future years, could relocate and resample the same stream sections.

The sample sections were approximately 100m in length and started and ended at distinguishable habitat breaks. All side channels were sampled within this length of stream section. Fish collected within the sampling section during each pass were placed in a bucket of fresh water until weight, total length and adipose fin clips could be taken. Crews were instructed to take fin clips from up to 30 cutthroat trout. I selected the adipose fin because I believed that removal of this fin would be the least damaging to the fish's ability to survive. Fish less than 80mm were not fin clipped because of the small size of the adipose fin. The fin clips were preserved in 95% alcohol. Five whole fish were also collected and preserved in 70% alcohol for museum specimens and to make comparisons between meristic counts and DNA analysis. Whole fish were sliced open along the right side to better preserve internal organs.

## RESULTS

Thirteen streams were surveyed on the Caribou National Forest through this effort (Table 1). One of these thirteen, Worm Creek (West), was completely dry on Forest. Of the other twelve streams, a variety of fish species composed the populations (Table 2).

### Beaver Creek

Beaver Creek is a tributary to the Logan River. Its headwaters are found in Idaho, Franklin County, and it drains south into Cache County. Sheep and cattle graze in the drainage and recreational activities such as hunting, fishing and camping are common. Two sample reaches were surveyed on Beaver Creek.

Table 2. Streams surveyed on the Caribou National Forest in 1994 and fish species found in sampling sections.

Stream	Fish species	
	Lower section	Upper section
Beaver Creek	CUT	CUT, BKT
Sugar Creek	CUT	NO SAMPLE
Worm Creek (West)	DRY	DRY
Birch Creek	CUT	CUT
Bailey Creek	BKT, SCU	BKT
Georgetown Creek	CUT, BKT, HRB	RBT, BKT
Montpelier Creek	NO SAMPLE	BKT, CUT, SCU
Little Beaver Creek	CUT, BKT, SCU	NO SAMPLE
North Creek	BKT, CUT, SCU	BKT, CUT, SCU
Liberty Creek	BKT	BKT
Mill Creek	CUT	DRY
Worm Creek (East)	DRY	NO FISH
Fish Haven	BKT	NO FISH

CUT=CUTTHROAT TROUT, BKT=BROOK TROUT, RBT=RAINBOW TROUT, HRB=HATCHERY RAINBOW TROUT, SCU=SCULPIN

The lower sample section was located in Utah at the 2nd crossing of Beaver Creek by road 011, just above the Beaver Mountain Ski Resort turnoff (photos 1 & 2), and goes upstream 100m. Water temperature at the time of electrofishing the section was 54°F at 9:27 in the morning of 27 July 1994. The section consisted of 100% cutthroat trout with 32 fish being captured during the first pass and 12 fish being captured during the second pass. Fin clips were collected from 31 fish and 5 whole fish were preserved (Photo 3 is one of the fish preserved). The total length of the fish capture ranged from 27mm to 205mm and averaged 97mm (3.8in.). The weight ranged from less than 1g to 102g and averaged 12.9g (0.5oz.). This section of Beaver Creek consisted primarily of age 1 fish with some young-of-the-year fish being present along with a few older fish (Figure 1).

The upper Beaver Creek section was located in Idaho just upstream from the turnoff to Pat Hollow where the road (Forest road 415) is closest to the stream and goes upstream 100m. This is approximately 300m from the turnoff to Pat Hollow (road 459). Water temperature, at the time of electrofishing the section, was 54°F at 11:45 in the morning of 27 July 1994. The section consisted of 100% cutthroat trout with 3 fish being captured during the first pass and no fish being captured during the second pass. Seven fish were collected above and 28 fish from below the sampling section to acquire the necessary number of fin clips and whole fish. Three brook trout were captured above the section. Brook trout were also captured below the section. Fin clips were

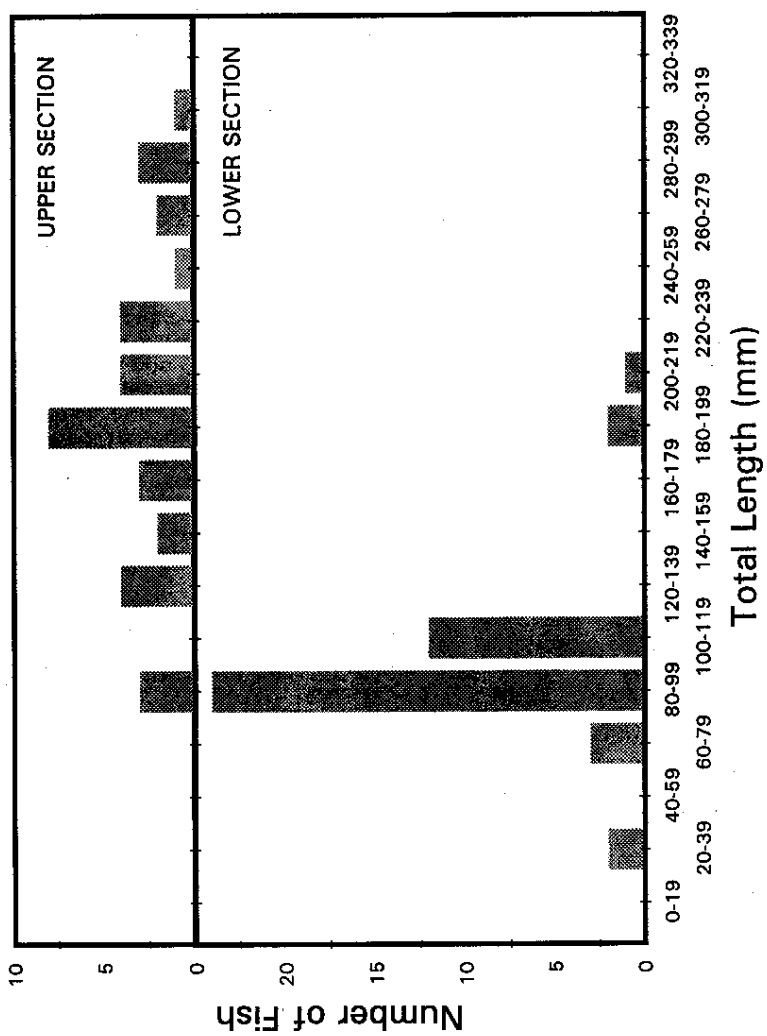


Figure 1. Length frequency of cutthroat trout captured in Beaver Creek, Logan River Drainage, in 1994.

collected from 30 fish and 5 whole fish were preserved (Photo 4 is one of the fish preserved). The total length of the cutthroat trout captured ranged from 80mm to 303mm and averaged 194mm (7.7in.). Their weight ranged from less than 6g to 312g and averaged 105g (3.7oz.). This section of Beaver Creek consisted primarily of age 3 fish and older fish (Figure 1).

#### Sugar Creek

Sugar Creek is a tributary to the Cub River. Its headwaters are found in Idaho, Franklin County, and drain in a southwesterly direction. Cattle graze in the drainage and recreation activities such as hunting and fishing may occur. One sample reach was surveyed on Sugar Creek.

This sample section was located at the Forest boundary and went upstream 100m (photos 5 & 6). Additional stream length was sampled to acquire additional fish samples. Water temperature at the time of electrofishing the section was 64°F on 26 July 1994. The section consisted of 100% cutthroat trout with 12 fish being captured during the first pass and 4 fish being captured during the second pass. Fin clips were collected from 27 fish and 5 whole fish were preserved (Photo 7 is one of the fish captured during the sampling effort.). The total length of the fish captured ranged from 32mm to 267mm and averaged 108mm (4.3in.). The weight ranged from less than 1g to 179g and averaged 23g (0.8oz.). This section of Sugar Creek consisted primarily of age 1 fish with some young of the year fish being present along with a few older fish (Figure 2). The riparian area was well developed (photo 8). Lack of water and adult holding area appears to be the major constraint for this population.

An upper section was not sampled in Sugar Creek because of the poor access into the area. A local rancher told us that all of the water was diverted from Sugar Creek about a mile below the Forest boundary for irrigation during the summer.

#### Worm Creek (West)

Worm Creek is a tributary to the Cub River and drains to the west. This stream was identified as Worm Creek (west) in this report to avoid confusion with the Worm Creek on the other side of the ridge which drains to the east. On 2 August 1994 this stream was hiked and no water was found within the channel.

#### Birch Creek

Birch Creek is a tributary to Mink Creek. It drains to the northwest. Cattle grazing and recreational activities such as

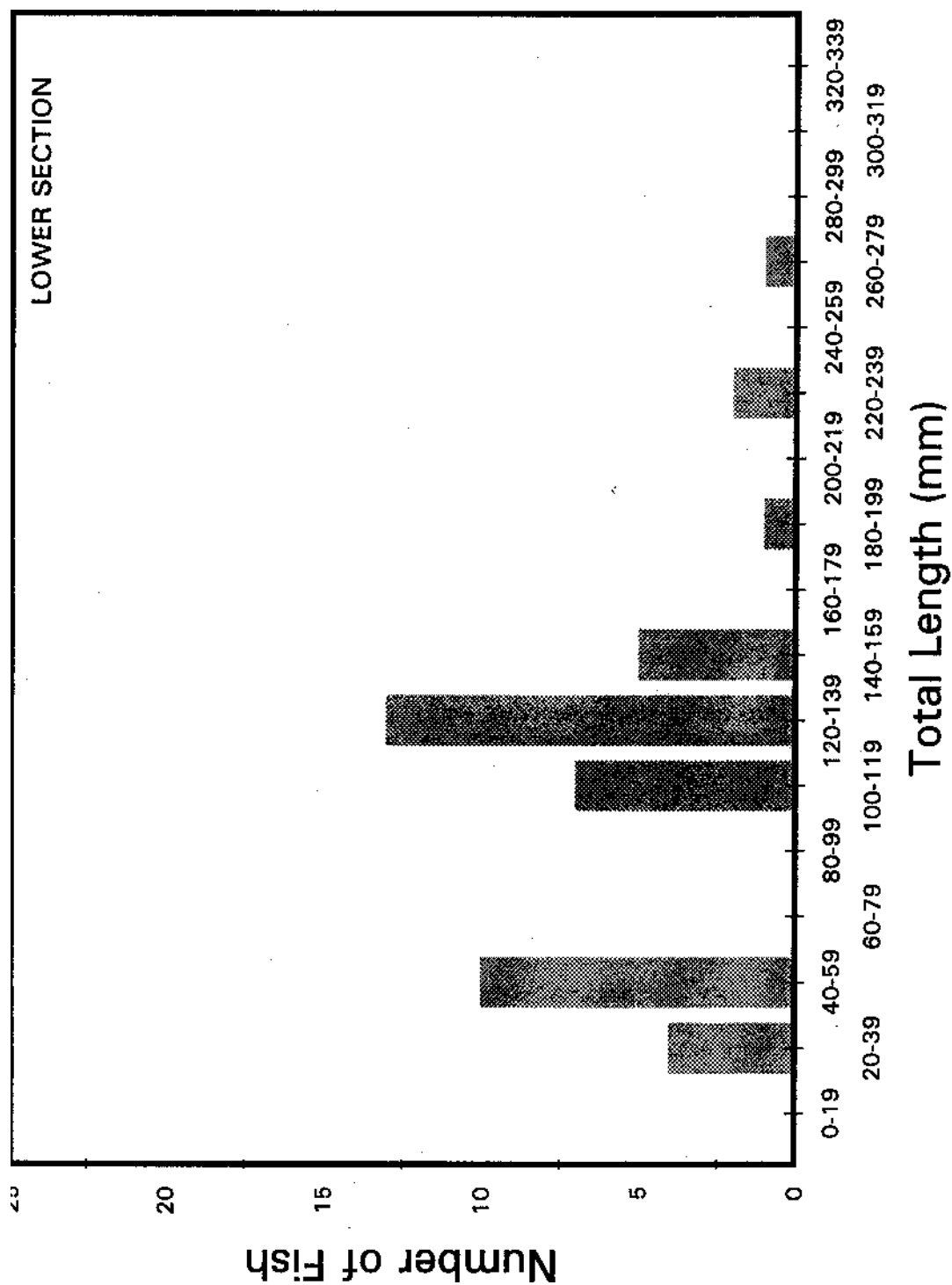


Figure 2. Length frequency of cutthroat trout captured in Sugar Creek, Bear River Drainage, Caribou National Forest, in 1994.

hunting and camping occur in the drainage. Two sample sections were surveyed on Birch Creek.

The lower section was located about 100m upstream from the Forest boundary and went upstream 100m (photo 9). Water temperature at the time of electrofishing the section was 65°F at about 4:00 on the afternoon of 25 July 1994. The section consisted of 100% cutthroat trout with 9 fish being captured during the first pass. A second pass was not conducted because of a rain and lightning storm. Fin clips were collected from all 9 fish. No whole fish were preserved (Photo 10 is one of the fish measured). The total length of the fish captured ranged from 112mm to 264mm and averaged 196mm (7.7in.). The weight ranged from 13g to 181g and averaged 101g (3.5oz.). This section of Birch Creek consists primarily of age 1 and 4 fish as distinguished by length (Figure 3).

The upper Birch Creek section was located adjacent to a cattle guard where Forest roads 407 and 057 meet (photo 11). Water temperature at the time of electrofishing the section was 64°F at 3:40 in the afternoon of 1 August 1994. The section consisted of 100% cutthroat trout with 14 fish being captured during the first pass and 2 fish being captured during the second pass. Three additional fish were then collected outside the 100m section. Fin clips were collected from 12 fish and no whole fish were preserved. The total length of the fish captured ranged from 68mm to 216mm and averaged 106mm (4.0in.). The weight ranged from less than 2g to 111g and averaged 18g (0.6oz.). This section of Birch Creek consisted primarily of age 1 fish (Figure ).

Grazing impacts were seen in the lower section. There were also three irrigation diversions off Forest and three fish ponds have been constructed adjacent to the stream. Beaver dams which existed in the lower reach appear to have washed out within the past few years. Water temperature appears to be a problem associated with lack of flows and not riparian vegetation.

#### Bailey Creek

Bailey Creek is a tributary to Bear River and is located just south of Soda Springs. It drains to the north. Bailey Creek was sampled by the Idaho Department of Fish and Game and a volunteer from the Montpelier Ranger District. Two sample reaches were surveyed on Bailey Creek.

The lower sample section was located off Forest and started at the Bailey Creek road ford due south of the water tank and went upstream 200m. Water temperature at the time of electrofishing the section was 57°F at about 2:30 in the afternoon of 27 July 1994. The section consisted of 16 brook trout and 12 sculpin. No second pass was conducted because no cutthroat trout were found in the reach. The total length of the brook trout captured ranged from 42mm to 162mm and averaged 95mm (3.7in.) (Figure 4).

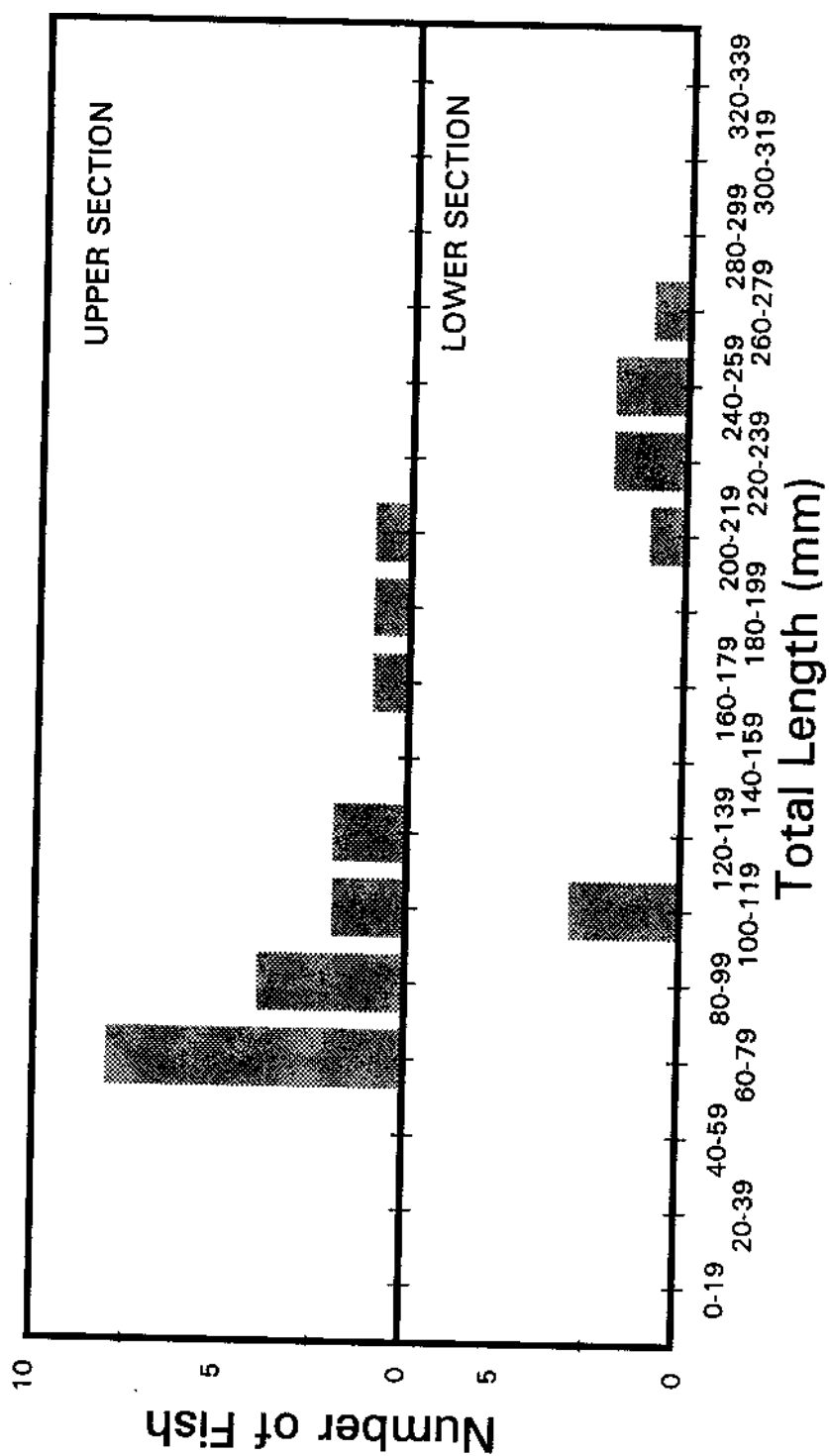


Figure 3. Length frequency of cutthroat trout captured in Birch Creek, Bear River Drainage, Caribou National Forest, in 1994.

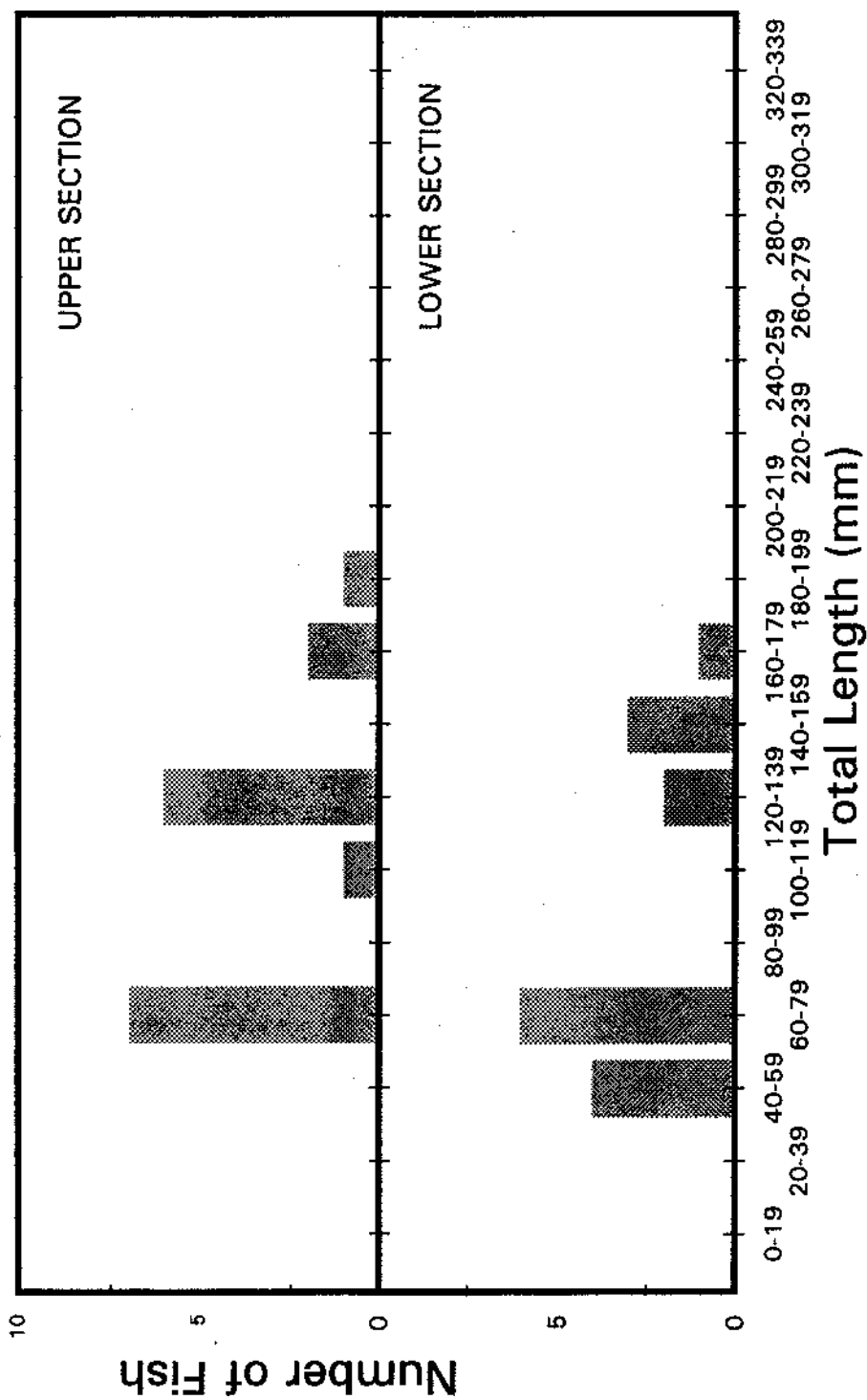


Figure 4. Length frequency of brook trout captured in Bailey Creek, Bear River Drainage, Caribou National Forest, in 1994.

The upper Bailey Creek section was located 130m below the footbridge at the end of the road and went 20 feet above the foot bridge. The stream was in excellent condition and had good riparian vegetation. The water temperature at the time of electrofishing was 45°F at 10:52 in the morning of 27 July 1994. The section consisted of 100% brook trout with 17 fish being captured during the first and only pass. The total length of the fish captured ranged from 61mm to 182mm and averaged 109mm (4.3in.)(Figure 4).

#### Georgetown Creek

Georgetown Creek is a tributary to Bear River and runs through Georgetown. It drains to the southwest. Georgetown Creek was sampled by the Idaho Department of Fish and Game and a volunteer from the Montpelier Ranger District. Two sample reaches were surveyed on Georgetown Creek.

The lower sample section was located approximately 500m downstream of the road culvert which was downstream of Church Hollow. Water temperature at the time of electrofishing the section was 46°F at about 8:06 in the afternoon of 26 July 1994. Fish in this section consisted of cutthroat (35%), rainbow (18%), hybrid cutthroat/rainbow (6%) and brook trout (41%). No second pass was conducted. The total length of the cutthroat and rainbow/cutthroat cross trout captured ranged from 61mm to 270mm and averaged 139mm (5.5in.). Brook trout total length ranged from 132mm to 198mm and averaged 176mm. Rainbow trout ranged from 163mm to 195mm and averaged 178mm in length (Figure 5).

The upper Georgetown Creek section started at the road culvert downstream from Lateral Canyon and continued upstream 100m. The stream was well shaded by riparian vegetation. Water temperature at the time of electrofishing the section was 43°F at 10:12 in the morning of 26 July 1994. The section consisted of brook and hatchery rainbow trout with 9 fish being captured during the first and only pass. The total length of the brook trout captured ranged from 155mm to 249mm and averaged 208mm (8.0in.). The total length of the rainbow trout captured ranged from 211mm to 294mm and averaged 263mm (10.0in.)(Figure 6).

#### Montpelier Creek

Montpelier Creek is a tributary to Bear River and flows through Montpelier. It drains to the south and then to the west prior to flowing into the Bear River. Montpelier Creek was sampled by the Idaho Department of Fish and Game and a volunteer from the Montpelier Ranger District. Only the upper reach was surveyed on Montpelier Creek.

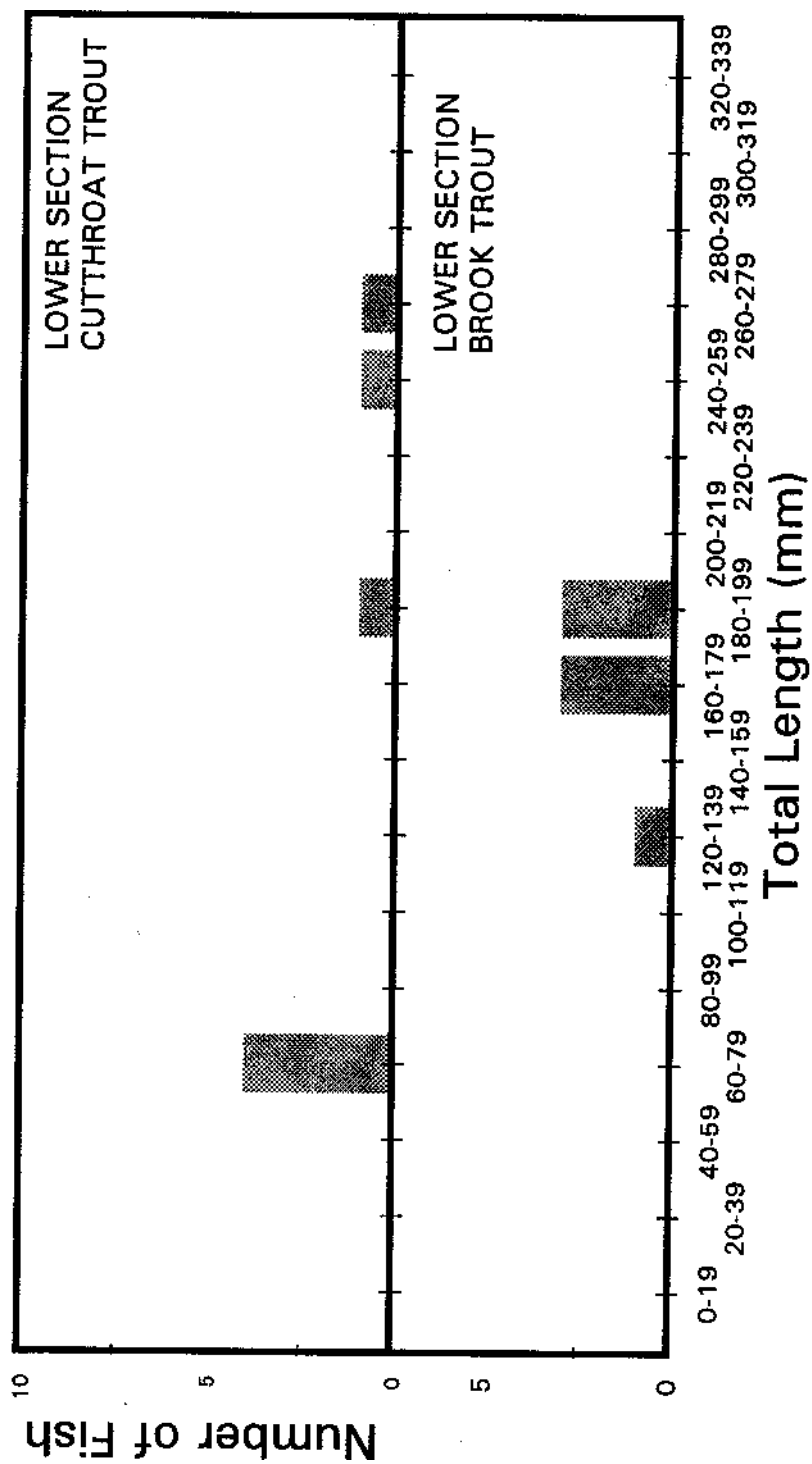


Figure 5. Length frequency of cutthroat and brook trout captured in the lower section of Georgetown Creek, Bear River Drainage, Caribou National Forest, in 1994.

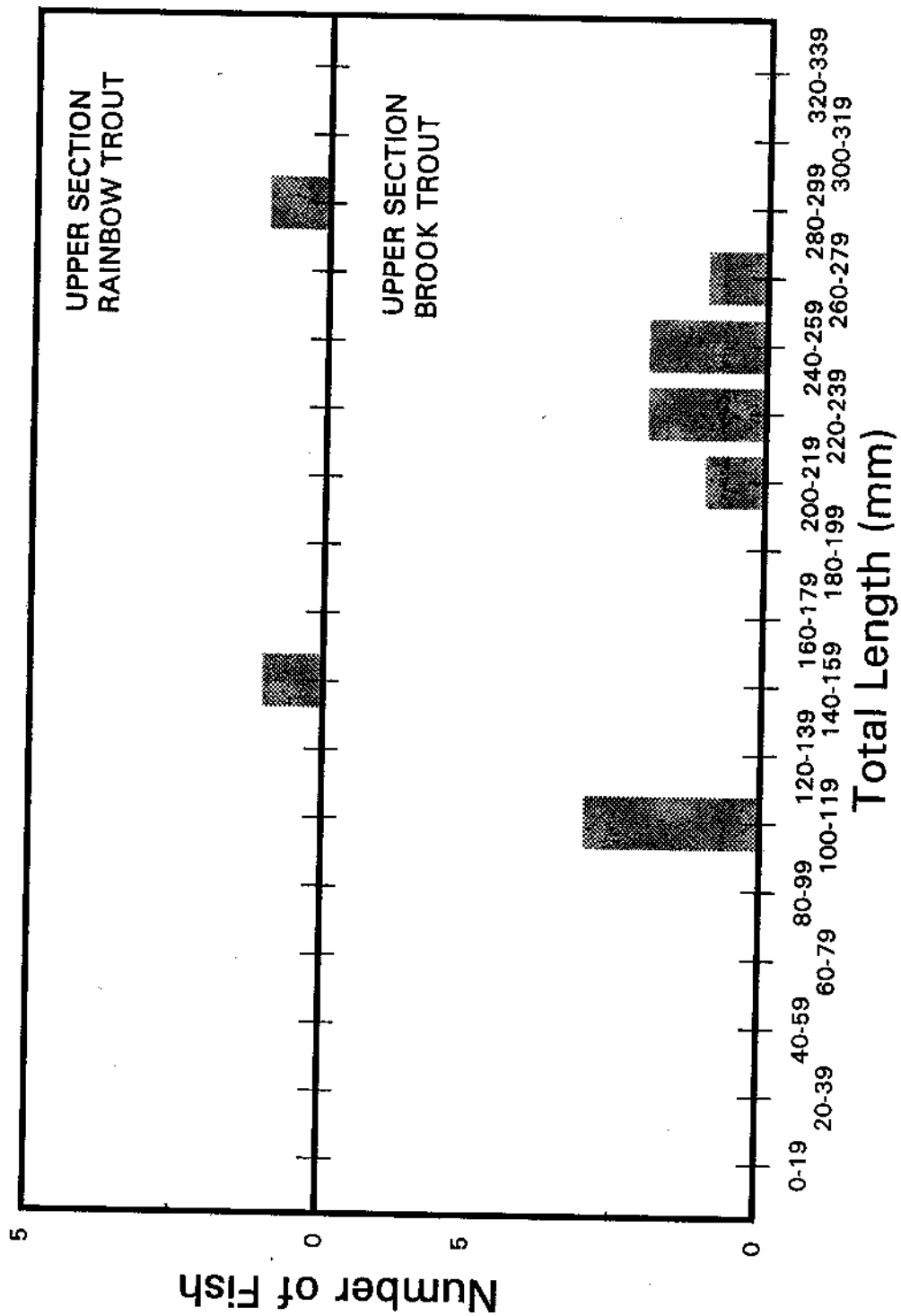


Figure 6. Length frequency of rainbow and brook trout captured in the upper 100m section of Georgetown Creek, Bear River Drainage, Caribou National Forest, in 1994.

The upper section started at the mouth of an intermittent creek immediately downstream of the mouth to Whiskey Creek. Only one pass was made in this section. Water temperature at the time of electrofishing the section was 68°F at about 2:37 in the afternoon of 29 July 1994. The section consisted of brook trout and sculpin. The one cutthroat trout collected above this reach was 234mm in length and weighted 128 grams. The length of the only brook trout captured within the section was 168mm and weighed 42 grams (Figure 7).

Water temperatures appeared to be a problem in the upper section of Montpelier Creek.

#### Little Beaver Creek

Little Beaver Creek is a tributary to Montpelier Creek which flows through Montpelier. It drains to the southeast. Little Beaver Creek was sampled by the Idaho Department of Fish and Game and a volunteer from the Montpelier Ranger District. Only one reach was surveyed on Little Beaver Creek.

This sample section began at the end of Forest road 114 where it crossed Little Beaver Creek and went upstream for 100m (photos 12,13,14). Water temperature at the time of shocking was 69°F at 2:32 in the afternoon.

Only brook trout and sculpin were found within the 100m section. The crew shocked on upstream to where the culvert from road 328 is located in an attempt to locate cutthroat trout. Seven cutthroat were located above the sample reach after shocking an additional 560m of stream. Brook trout in the 100m section averaged 144mm in total length and ranged from 42mm to 268mm. For the seven cutthroat, the average length was 114mm and ranged from 85mm to 202mm (Figure 8). Water temperature appears to be a problem in Little Beaver Creek.

#### North Creek

North Creek is a tributary to Ovid Creek which flows through the town of Ovid and into the Bear River. The creek drains to the east and leaves to Caribou Forest from township 12 south, range 42 east, and section 12. Two sample sections were surveyed in North Creek.

The lower section was located at a BLM fence line, under a major power line, and went upstream 100 m (photos 15,16,17). During the first pass, 63 fish were captured of which 29 were brook trout, 3 were cutthroat trout, and 31 were sculpin. The second pass produced 33 fish of which 16 were brook trout, 13 were cutthroat trout, and 4 were sculpin. Pass three produced 25 brook trout (Figure 9).

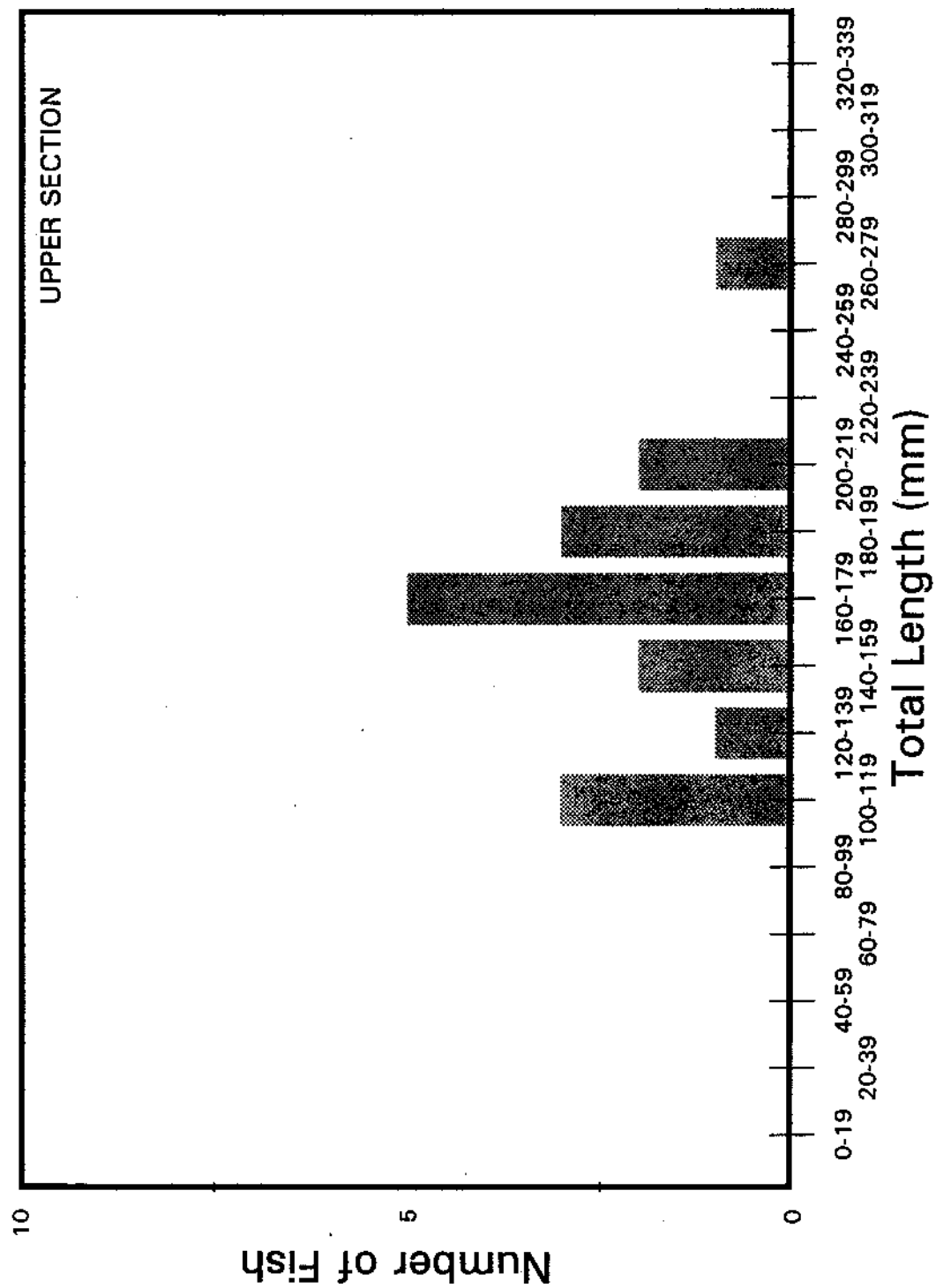


Figure 7. Length frequency of brook trout captured in Montpelier Creek, Bear River Drainage, Caribou National Forest, in 1994.

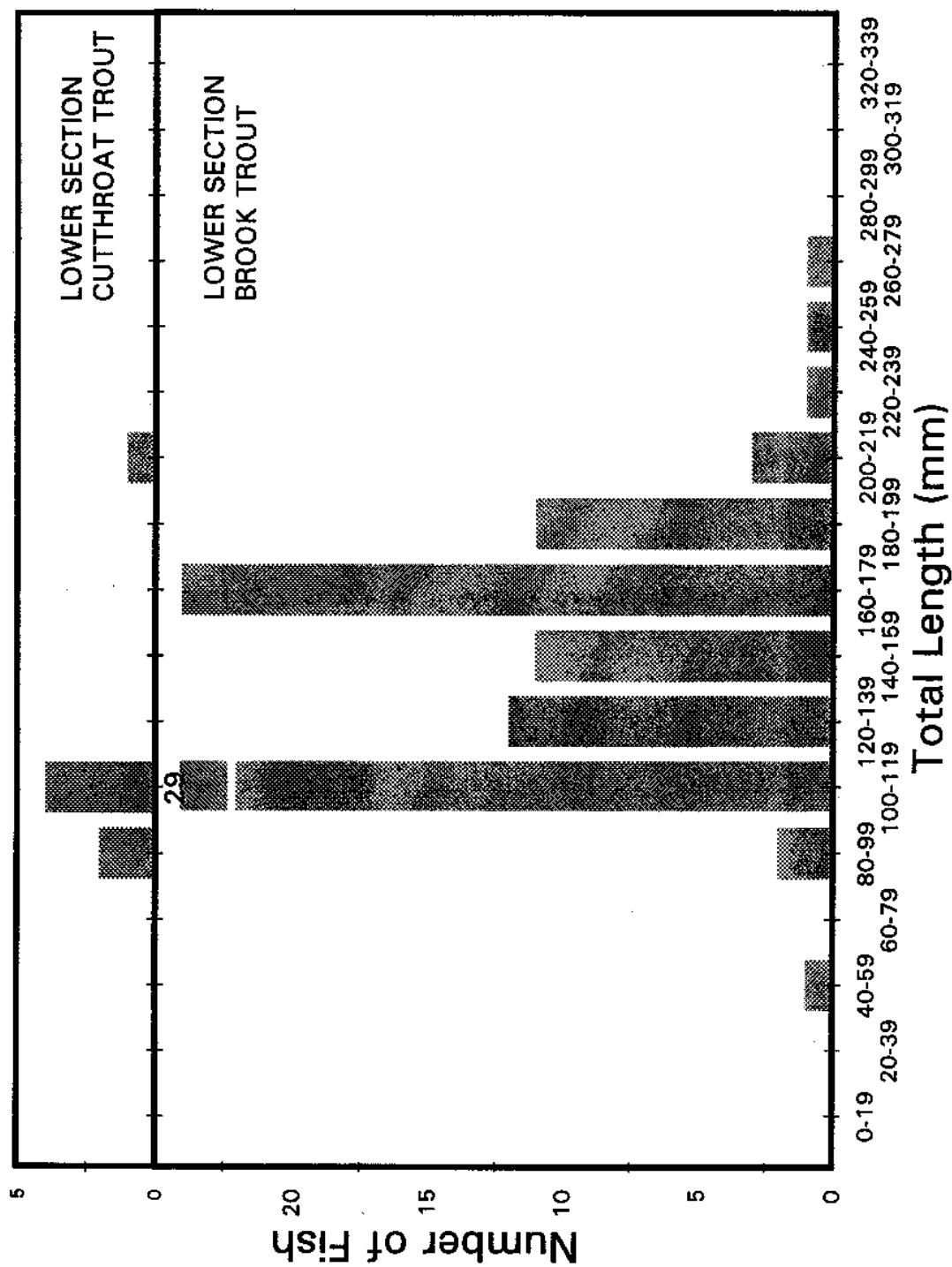


Figure 8. Length frequency of cutthroat and brook trout captured in Little Beaver Creek, Bear River Drainage, Caribou National Forest, in 1994.

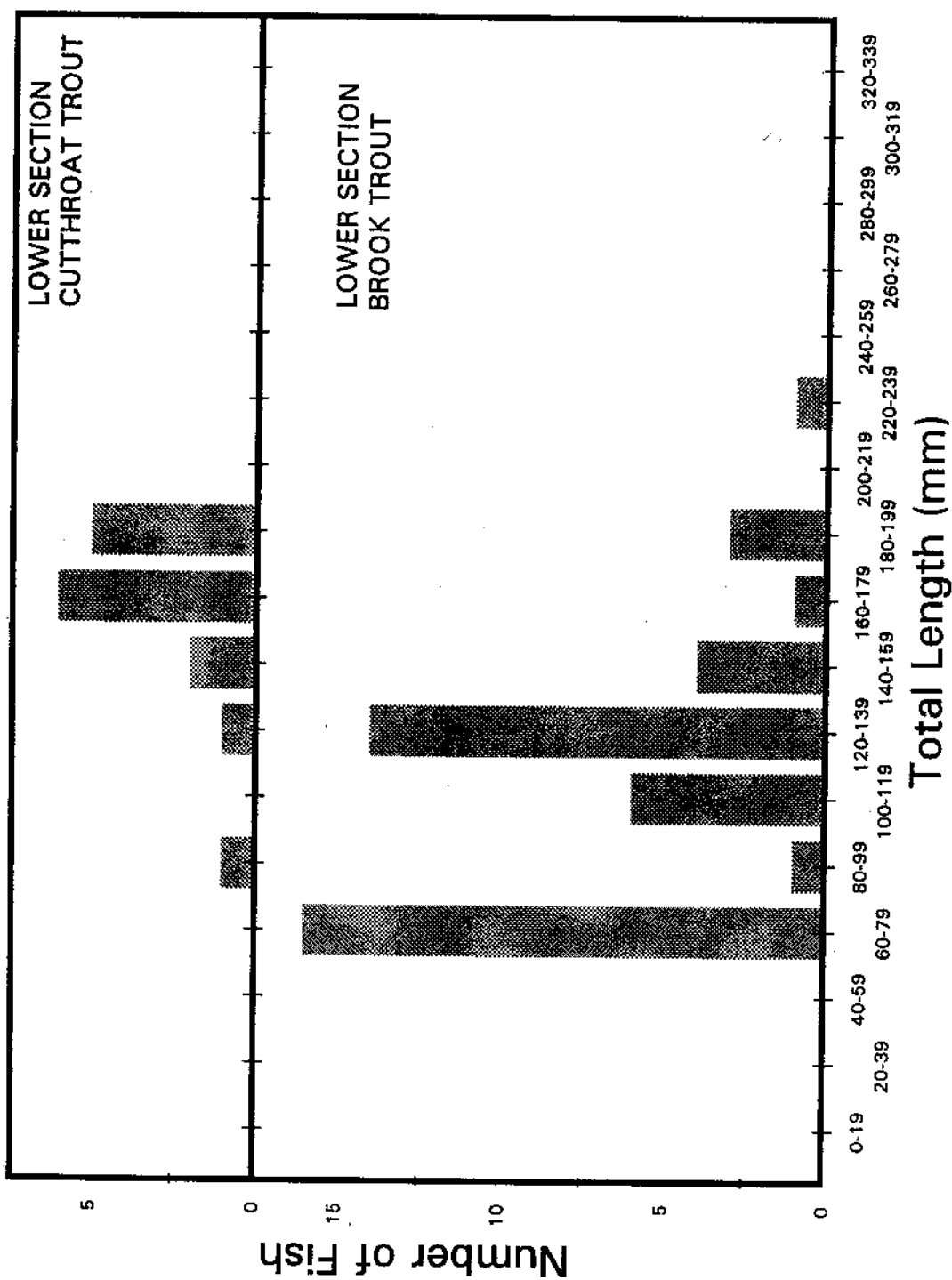


Figure 9. Length frequency of cutthroat and brook trout captured in the lower 100m section of North Creek, Bear River Drainage, Caribou National Forest, in 1994.

The cutthroat trout averaged 163 mm in length and ranged from 85mm to 189mm. Brook trout averaged 113mm and ranged from 61mm to 233mm. Sculpin ranged from 45mm to 119mm.

The upper section started 500m below the mouth of Mill Hollow and went upstream 100m. Cutthroat and brook trout and sculpin were found in the reach. During the first pass, six cutthroat, one brook trout, and 10 sculpin were captured. Two brook trout and 11 sculpin during the second pass. No cutthroat trout were captured during the second pass. An additional 300m was sampled above the sampling site to provide additional fin clips for genetic analysis. An additional 15 cutthroat trout were collected.

At the time of the sample, 28 July 1994, 2:48 PM, the stream water temperature was 54°F and the conductivity was 223. Cutthroat trout averaged 164mm in total length and ranged from 98mm to 223mm. Brook trout averaged 101mm and ranged from 51mm to 208mm. Sculpin ranged from 62mm to 113mm (Figure 10).

#### Liberty Creek

Liberty Creek, whose waters also end up in Ovid Creek by way of Mill Creek, was also surveyed. Only brook trout were found in the creek. The sample site is located 100m upstream of where road 813 meets Liberty Creek (photos 18,19,20,21). Of the brook trout collected, few were measured because of time constraints. Crews noted that some bank damage was evident from cattle grazing.

#### Mill Creek

Mill Creek, a tributary to Liberty Creek, was also sampled. The sample site was located where Mill Creek empties into an old beaver pond just below Nieber Springs and went upstream for 100m (photos 22,23,24,25).

Only cutthroat trout were found in this area. Additional stream was sampled above and below this area. In all, 36 cutthroat were collected and measured. They averaged 157mm in total length and ranged from 74mm to 311mm (Figure 11). No water existed above Nieber Springs or approximately 1 mile below the spring. Cattle grazing was affecting water depth and quality through trampling.

#### Worm Creek

Worm Creek, a tributary to the Bear Lake Refuge from an easterly direction, will hereafter be referred to as Worm Creek east. This stream should not be confused with Worm Creek west which flows in a westerly direction. At the Forest boundary no water was in the stream. Higher up, the stream had water in it, but no fish.

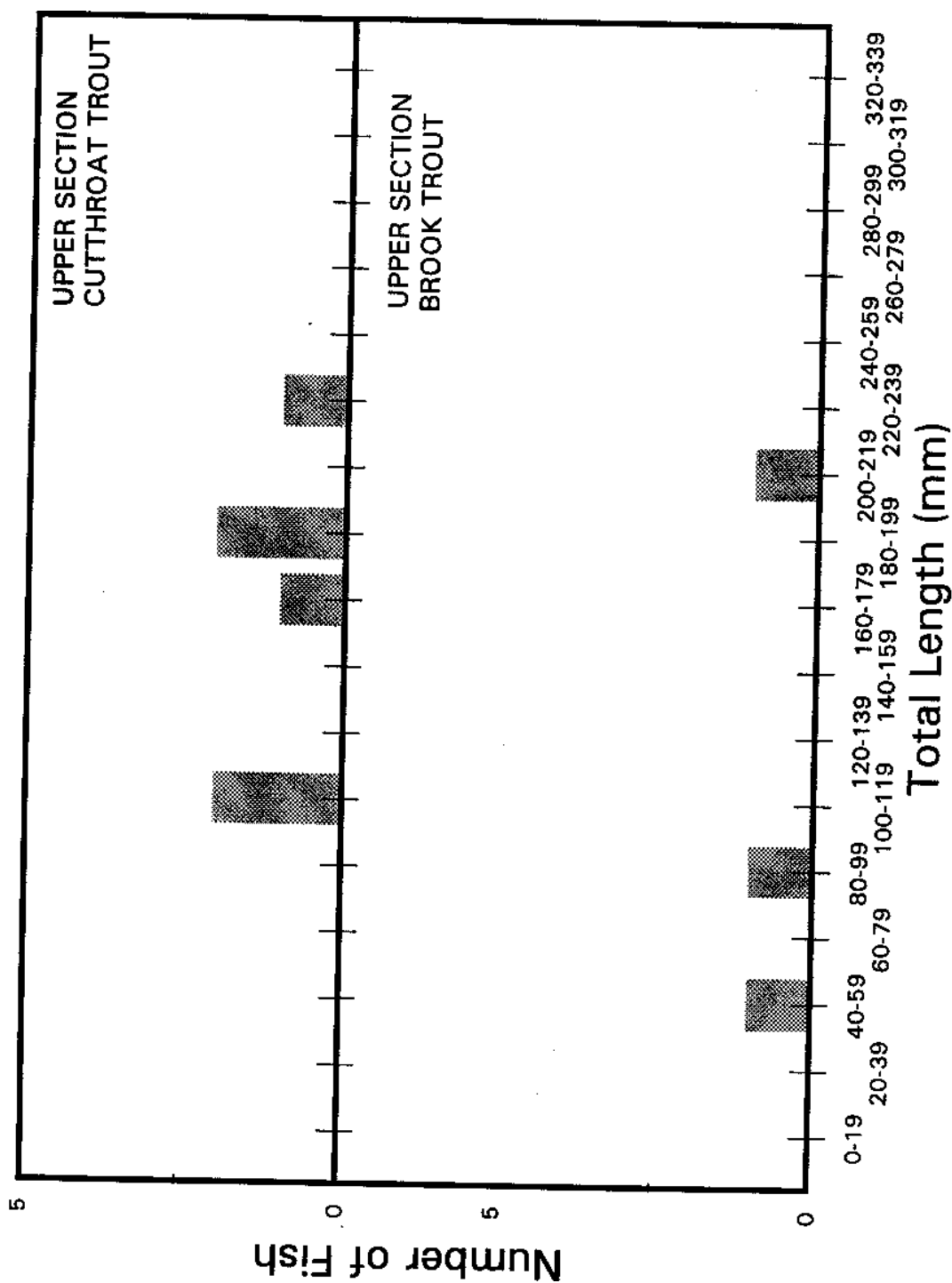


Figure 10. Length frequency of cutthroat and brook trout captured in the upper 100m section of North Creek, Bear River Drainage, Caribou National Forest, in 1994.

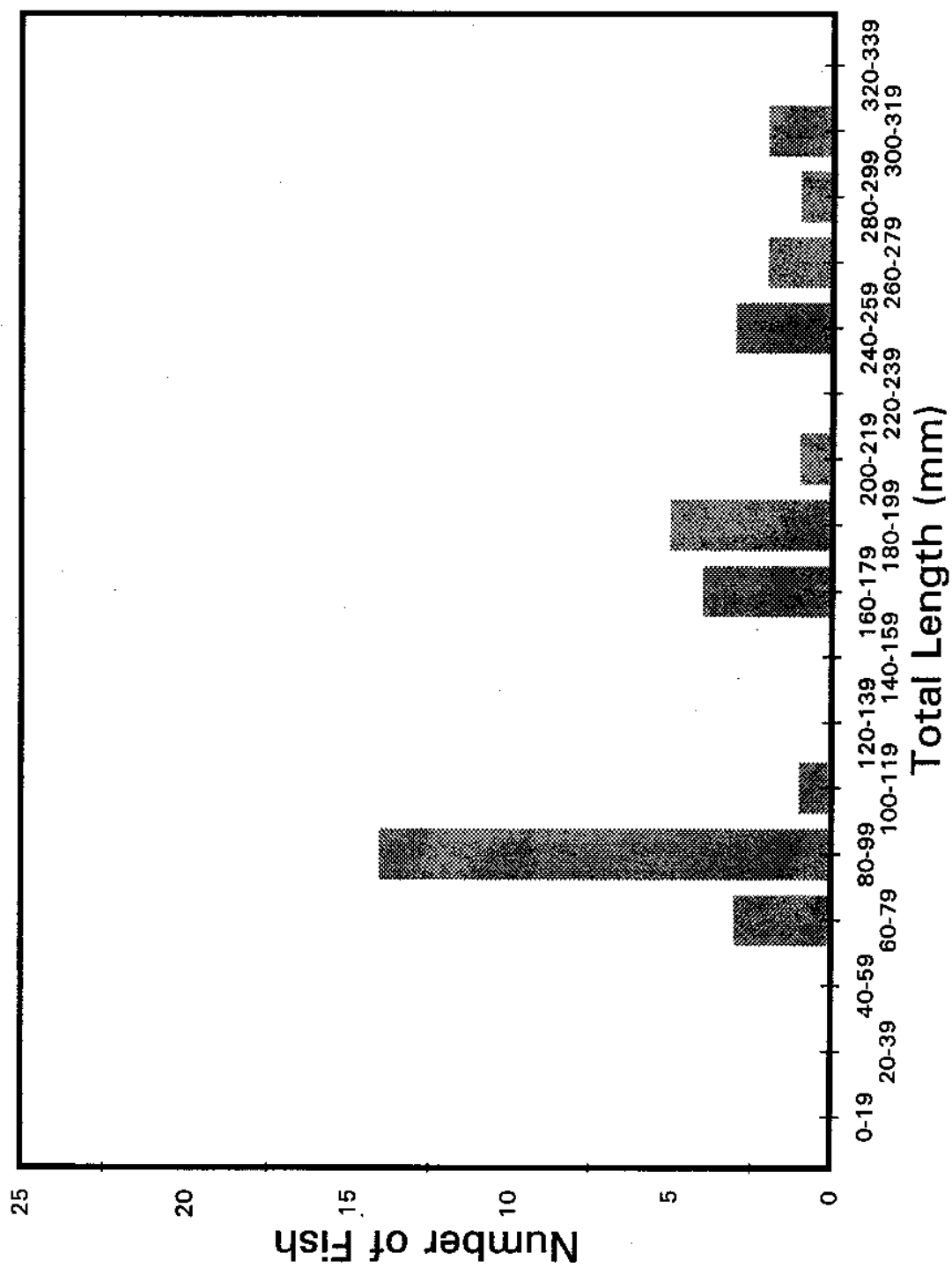


Figure 11. Length frequency of cutthroat trout captured in Mill Creek, Bear River Drainage, Caribou National Forest, in 1994.

## Fish Haven

Fish Haven was sampled in two different locations. The first was at Sadducee Springs and went downstream 100m. No fish were found in this section and a water quality or chemistry problem is suspected. The second sample was conducted at the Forest boundary and went upstream for 100m. Only brook trout were collected in this reach. Weights, lengths, and counts were not taken because of the limited time the crew had that day.

## OPPORTUNITIES AND RECOMMENDATIONS

Opportunities mean many different things to different people. In this report, I have viewed opportunities from a fish management perspective. Ecosystem management principles would suggest that we manage for all resources so as to not lose any one part.

### Beaver Creek

The opportunity exists in Beaver Creek to improve fish habitat through reducing sediment entering the stream from the number of fords and roads in the drainage. Opportunities also exist to improve fish habitat through restoring riparian vegetation and reducing grazing impacts. From a fish management perspective treatment of this drainage to remove or reduce competition from exotic species would also benefit native cutthroat trout populations.

### Sugar Creek

The main opportunity to improve fish habitat in Sugar Creek would be to control sediment input into the stream from the old road the lies adjacent to the stream. Little can be done about the lack of water in the drainage on forest. Cutthroat trout population may also benefit from improve passage, through private land, from the mainstem rivers off forest.

### Worm Creek (West)

It is undetermined at this point as to weather or not fish habitat could be improve up Worm Creek West. Improvement may come by reducing sediment transport to downstream sections during spring runoff. The drainage would have to be looked at during the spring to determine if benefits were possible.

### Birch Creek

The main opportunity to improve fish habitat in Birch Creek would be to control sediment input into the stream from the road the lies adjacent to the stream. Little can be done about the lack of water in the drainage on forest. Cutthroat trout population may also benefit from improved passage from the mainstem rivers off forest.

### Bailey Creek

From a fish management perspective treatment of this drainage to remove exotic species and the stocking of native species could also benefit native cutthroat trout populations.

### Georgetown Creek

From a fish management perspective treatment of this drainage to remove exotic species and the stocking of native species could also benefit native

cutthroat trout populations.

#### Montpelier Creek

Opportunities exist to improve fish habitat through restoring riparian vegetation and reducing grazing impacts. Water temperatures are a problem in the upper reach of Montpelier Creek. From a fish management perspective treatment of this drainage to remove exotic species and the stocking of native species could also benefit native cutthroat trout populations.

#### Little Beaver Creek

Water temperature appears to be a problem in Little Beaver Creek. No reason is given in the notes on the stream for such a high water temperature.

#### North Creek

From a fish management perspective treatment of this drainage to remove exotic species and the stocking of native species could also benefit native cutthroat trout populations.

#### Liberty Creek

Liberty Creek had no identified opportunities. Beaver dams on the stream would exclude it from removing non-native fish with any reasonable success.

#### Mill Creek

The opportunity exists in Mill Creek to improve fish habitat through reducing impacts from cattle grazing in the area where fish were found. Exploring ways of restoring beaver habitat to the area would also assist in raising the water table and improving fish holding areas.

#### Worm Creek (East)

Worm Creek has the potential to be used as a genetic reserve area for fish found to be pure Bonneville cutthroat trout. Once a population is found to be pure, a subsample of fish could be taken from that stream and stocked into Worm Creek East. Care, however, should be taken to be sure another native species would not be impacted by the stocking. Amphibians, snails and invertebrates should be considered prior to choosing to stock Worm Creek East.

#### Fish Haven

From a fish management perspective treatment of this drainage to remove exotic species and the stocking of native species could also benefit native cutthroat trout populations. Providing for fish passage to Bear Lake would also help future cutthroat trout populations.

#### Drainage Wide

Two additional streams were mentioned in conjunction with this survey which might contain Bonneville cutthroat trout. These were located on the Malad District of the Caribou National Forest. They are Deep Creek and Wright Creek.

In this report I have dealt with mainly fish issues or habitat issues which were obvious at a glance. No habitat survey was conducted to identify specific habitat project which could be implemented to improve fish habitat.

I would recommend that the Caribou National Forest in conjunction with the Uinta & Wasatch-Cache National Forests conduct habitat inventories on Beaver Creek. The upper Logan River, of which Beaver Creek is a part of, has

been identified as a possible reserve area for Bonneville cutthroat trout.

Streams like Sugar, Birch, Mill, and Little Beaver creeks are not large enough to make it worth while to conduct fish habitat surveys on. It would be beneficial to conduct habitat surveys on the other streams mentioned in this report.

All fish samples have been taken to Brigham Young University for analysis. Because of limited money, only a few of the fish from each stream will be analyzed at this time.

## APPENDIX